REMARKS

The Office Action of July 8, 2003 has been received and its contents carefully considered. Claims 1-10 are pending in this application. Claims 2 and 4 have been canceled without prejudice to or waiver of the subject matter recited therein. Claims 1, 3 and 5-10 have been amended. Examination of the amended application respectfully is requested.

The Examiner requires that Fig. 7 be labeled "Prior Art." A replacement drawing for Fig. 7, labeled Prior Art, is submitted herewith together with a cover sheet. The objection therefore should be withdrawn.

The Examiner objected to the title of the invention as not descriptive of the invention to which the claims are directed. The title has been amended to meet this requirement. The objection accordingly should be withdrawn.

The Examiner also objected to the specification as failing to provide proper antecedent basis for the claimed subject matter in claims 3 and 9. Claim 3 has been amended and it is submitted that the objection with respect to this claim no longer is applicable and accordingly should be withdrawn. The objection as to claim 9 is respectfully traversed.

The limitation in claim 3 for which the Examiner finds no support in the specification has been replaced by the following:

> a universal contact structure including the second conductivity type region is provided in contact with the electrode.

This is supported by Fig. 5 and in the specification at page 11, second full paragraph. The objection as to support for claim 3 accordingly is no longer applicable and accordingly should be withdrawn.

OK

The limitation in claim 9 for which the Examiner finds no support in the specification is in fact supported by Fig. 6 and in the specification, particularly in the paragraph bridging pages 12 and 13. Thus, this objection should be withdrawn.

OK

The Examiner rejects claims 1, 3, 5, 7, 8 and 10 under 35 U.S.C. 102(b) as being anticipated by *Nagura et al.*, and rejects claim 9 under 35 U.S.C. 103(a) as being obvious over *Nagura et al.* Claim 1 has been amended, and it is submitted that the rejection is inapplicable to the amended claims and the remaining rejected claims depending therefrom.

Specifically, claim 1 is amended to clarify that the diode includes a second conductivity type region embedded in the first conductivity type semiconductor region in a region crossing over a boundary of the contact region. The second conductivity type region is specified to be in contact with the electrode in the contact region, and to have a conductivity type different from that of the first conductivity type semiconductor region.

Nagura et al. discloses a transistor that has an N+ region 6 embedded in a P+ base region 4 and surrounding a base electrode 7. The N+ region 6 limits the current that flows from the side wall of an emitter region 5 toward the base region just beneath the base electrode 7. However, contrary to a claimed feature of the present invention the N+ region 6 of *Nagura et al.* is not in contact with the base electrode 7, so that majority carriers remaining in the base region 4 disadvantageously cannot effectively be taken into the N+ region 6 during

a switching operation. Please see the description at page 8, lines 17-23 of the present specification for comparison of this aspect to the first preferred embodiment of the present invention which specifies describes that

> . . a portion of the N-type region 21 contacts the base electrode 15, so that minority carriers (electrons) remaining in the base region 12 can be taken into the N-type region 21 during a switching operation. This suppresses accumulation of the minority carriers in the base region 12, thereby speeding up the switching operation.

In view of at least this, *Nagura et al.* clearly neither anticipates nor even suggests the claimed invention. Thus, claim 1 and claims 3, 5, 7, 8 and 10 depending therefrom are deemed clearly to be patentable over *Nagura et al.,* and the rejection accordingly should be withdrawn.

OK

Claims 1, 4, 5, 7 and 10 are rejected under 35 U.S.C. §102(b) as being unpatentable over *Mizushima.* It is respectfully submitted that the rejection is inapplicable to the amended claim 1 and its dependents.

Mizushima et al. disclose a transistor that has an N+ region 8 embedded in the base layer 2. The N+ region 8 is in contact with a base electrode 7, but it is provided in the middle portion of the base electrode 7. That is, the N+ region 8 does not lie in a region crossing over a boundary of a contact region where the electrode 7 is in contact with the base layer 2. *Mizushima et al.* have adopted this arrangement in order to enhance the turning-off speed of the transistor by absorbing minority carriers with the N+ region 8.

Mizushima et al. further disclose, in Fig 3, an arrangement that has a P+ region 4' in the middle of the base electrode 7 and a metal layer 9 formed between the electrode 7 and the base layer 2. A Schottky joint is formed between the metal layer 9 and the base layer 2, so

that the Schottky diode is provided around the P+ region 4'. However, the structure shown in Fig. 3 does not have any N+ region that is in contact with the base electrode 7.

Therefore, *Mizushima et al.* do not disclose or even suggest a device in which a second conductivity type region in contact with a base electrode in a contact region as required by amended claim 1. For at least this reason it is deemed to be clear that *Mizushima et al.* does not anticipate or render unpatentable under 35 USC 103(a) any of claim 1 and depending claims 4, 5, 7 and 10. The rejection therefore is inapplicable to amended claim 1 and its dependents, and accordingly should be withdrawn.

OK

Based on the above, it is submitted that the application is in condition for allowance and such Notice, with allowed claims 1, 3 and 5-10, earnestly is solicited. Should the Examiner feel that a conference would help to expedite the prosecution of this application, the Examiner is hereby invited to contact the undersigned counsel to arrange for such a conference.

Respectfully submitted,

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Date

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